

AMENDMENTS TO THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double-bracketed text indicating deletions.

LISTING OF THE CLAIMS

1. (Currently Amended) A method for manufacturing a thin film, comprising the step of applying a force, with a part having a sharp tip, onto an entire area or arbitrary region of a film during or after formation of the film, so as to control a structure of the film, wherein

the structure of the film is controlled by controlling ~~(i) a crystalline structure of crystals constituting the film,~~ (iii) an orientation direction of crystals constituting the film, (iii) an orientation direction of molecules in the crystals, or ~~(iv) any combination of (i) through and (iii), and~~

a surface of the film is scanned by contacting the part having a sharp tip with the film to apply a mechanical force on the film in a scanning direction so that the crystals and/or molecules are oriented in the scanning direction, and

wherein the scanning direction is a film in-plane direction and is not perpendicular to the film.

2. (Currently Amended) A method for manufacturing a thin film, comprising the step of applying a force, with a part having a sharp tip, onto an entire area or arbitrary region of a film during or after formation of the film, with a temperature of the film maintained at or above a glass transition temperature of an amorphous region, so as to control a structure of the film, wherein

the structure of the film is controlled by controlling ~~(i) a crystalline structure of crystals constituting the film, (ii)~~ an orientation direction of crystals constituting the film, ~~(iii)~~ an orientation direction of molecules in the crystals, or ~~(iv)~~ any combination of (i) ~~through and (iii)~~, and

a surface of the film is scanned by contacting the part having a sharp tip with the film to apply a mechanical force on the film in a scanning direction so that the crystals and/or molecules are oriented in the scanning direction, and

wherein the scanning direction is a film in-plane direction and is not perpendicular to the film.

3. (Previously Presented) A method as set forth in claim 1, wherein the force applied on the film derives from only the part having a sharp tip.

4. (Previously Presented) A method as set forth in claim 2, wherein the force applied on the film derives from only the part having a sharp tip.

5. (Canceled)

6. (Canceled)

7. (Previously Presented) A method as set forth in claim 1, wherein the thin film is formed on a substrate.

8. (Previously Presented) A method as set forth in claim 2, wherein the thin film is formed on a substrate.

9. (Previously Presented) A method as set forth in claim 1, wherein the part having a sharp tip is an atomic force microscope.

10. (Previously Presented) A method as set forth in claim 2, wherein the part having a sharp tip is an atomic force microscope.

11. (Previously Presented) A method as set forth in claim 1, wherein plural areas of the film are simultaneously processed with plural parts having sharp tips.

12. (Previously Presented) A method as set forth in claim 2, wherein plural areas of the film are simultaneously processed with plural parts having sharp tips.

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Previously Presented) A method as set forth in claim 1, wherein the film is made of an organic polymer material.

18. (Previously Presented) A method as set forth in claim 2, wherein the film is made of an organic polymer.

19. (Previously Presented) A method as set forth in claim 1, wherein the structure of the film is controlled by scanning a film surface with the part having a sharp tip, and
wherein the structure of the film is controlled by controlling (i) the crystalline structure of crystals constituting the film, (ii) the orientation direction of crystals constituting the film, (iii) the orientation direction of molecules in the crystals, or (iv) any combination of (i) through (iii).

20. (Previously Presented) A method as set forth in claim 2, wherein the structure of the film is controlled by scanning a film surface with the part having a sharp tip, and
wherein the structure of the film is controlled by controlling
(i) the crystalline structure of crystals constituting the film, (ii) the orientation direction of crystals constituting the film, (iii) the orientation direction of molecules in the crystals, or (iv) any combination of (i) through (iii).

21. (Previously Presented) A method for manufacturing a multi-layered film, in which a method of claim 1 is carried out on all of or some of the layers of the multi-layered film.

22. (Withdrawn) A thin film having a structure controlled by a force applied on an entire area or arbitrary region of the film by a part having a sharp tip during or after formation of the film.

23. (Withdrawn) A thin film as set forth in claim 22, wherein a crystalline structure of crystals constituting the film is controlled.

24. (Withdrawn) A thin film as set forth in claim 22, wherein an orientation direction of crystals constituting the film is controlled.

25. (Withdrawn) A thin film as set forth in claim 22, wherein an orientation direction of molecules in crystals is controlled.

26. (Withdrawn) A thin film as set forth in claim 22, wherein the film includes crystals wherein at least two of a crystalline structure of crystals constituting the film is controlled, an orientation direction of crystals constituting the film is controlled and an orientation direction of molecules in crystals is controlled.

27. (Withdrawn) A thin film as set forth in claim 22, wherein at least two regions of crystals constituting the film are controlled according to at least one of a crystalline structure of crystals constituting the film is controlled, an orientation direction of crystals constituting the film is controlled and an orientation direction of molecules in crystals is controlled.

28. (Withdrawn) A thin film as set forth in claim 22, wherein the film is made of an organic polymer material.

29. (Withdrawn) A thin film as set forth in claim 22, wherein the film is formed on a substrate.

30. (Withdrawn) A multi-layered film having a structure controlled by a force applied on an entire area or arbitrary region of the film by a part having a sharp tip during or after formation of the film controlled by carrying out the method of claim 1 on all or some of the layers of the multi-layered film.

31. (Withdrawn) A multi-layered film having a structure controlled by a force applied on an entire area or arbitrary region of the film by a part having a sharp tip during or after formation of the film controlled by carrying out the method of claim 2 on all or some of the layers of the multi-layered film.

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END OF CLAIM LISTING